DOCUMENT RESUME

ED 067 468 EC 031 520

TITLE Exceptional Children Conference Papers: Adoption of Technology and Program Development.
INSTITUTION Council for Exceptional Children, Arlington, Va.
PUB DATE 72
NOTE 56p.; Papers presented at the Special Conference on Instructional Technology (San Antonio, Texas, December 3-4, 1971)

EDRS PRICE EDRS Price MF-$0.65 HC-$3.29
DESCRIPTORS Community, *Conference Reports, Curriculum Development, *Exceptional Child Education, *Instructional Technology, Mentally Handicapped, *Program Development, Research Utilization

ABSTRACT

A selection of four papers from those presented at the Special Conference on Instructional Technology (San Antonio, Texas, December 3-4, 1971) are featured. Donald Bailey considers the issue of adopting technology in local schools. Adoption of instructional technology, as part of curriculum development in mental retardation (Perspective Theorem), and as partial fulfillment of community needs (Mary Head Crowder), is explored, while media and curriculum research and its implications for improved program development are examined by Jenny Armstrong. Other collections of papers from the conference have been compiled and are available as EC 031 521 (Instructional Technology for Personnel Training), EC 031 522 (The Improvement of Special Education through Instructional Technology), EC 031 523 (Communication, Production, and Dissemination of Instructional Technology), and EC 031 520 (The Use and Evaluation of Instructional Technology in the Classroom). (CD)

EC031520

ED047440

Exceptional Children Conference Papers: Adoption of Technology and Program Development

Papers Presented at the
Special Conference on Instructional Technology
The Council For Exceptional Children
San Antonio, Texas
December 3-4, 1970

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Arlington, Virginia 22202

EC 031 520

EC031520

PREFACE

Adoption of Technology and Program Development is a collection of four papers selected from those presented at the Special Conference on Instructional Technology, San Antonio, Texas, December 1 - 2, 1970. These papers were collected and compiled by The Council for Exceptional Children, Arlington, Virginia. Other collections of papers from the Conference have been compiled and are available from the ERIC Document Reproduction Service. Other collections announced in this issue of *Research in Education* may be found by consulting the institution index under Council for Exceptional Children or the subject index under Exceptional Child Education. Titles of these other collections are:

The Improvement of Special Education through Instructional Technology

The Use and Evaluation of Instructional Technology in the Classroom

Instructional Technology for Personnel Training

Communication, Production, and Dissemination of Instructional Technology

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Are We Critics Correct?
(Adopting Technology in the Local Schools)

Donald Mather
Humboldt State College

I'm certain most of us concur in the statement: "I don't believe in change just for the sake of change; it's got to be for a real reason." And perhaps we honestly attempt to avoid change for the sake of change. Fortunately we receive support in our efforts from the American advertising industry. This segment of our society is very adept at helping us handle this potentially troublesome attitude by constantly assuring us that every change is really a product improvement and that good responsible American manufacturers would never be so wasteful of time, money, and talent as to bring out a new item unless it met some intensely vital personal or social need. Often of course we aren't really aware of our growing needs until the advertisers graciously draw the blinds from our eyes in order to see the benefits of new cars, fashions, refrigerators, floor wax, soaps, television sets, instant-meals, and new face cream with genuine mud (saves you a trip to the special mud laboratory in Germany - or to the corner puddle).

In the process of helping to make us aware of our past neglected needs, the advertisers have recently discovered that everything they are peddling are "genuine break-throughs". Now I'm willing to admit that the advent of the oiel and the microwiel were nearly "break-outs", but not really break-throughs. However the Madison Avenue verbally exceptional group assures us that the current new-look is really a break-through in allowing the American woman to express herself better.

Such dedication to meeting human needs via frequent changes seems to be a characteristic of industrialized societies always, of course, with the

understanding that such changes are product or service improvements. The development of such a condition is fairly predictable as any society moves from its subsistence level to greater affluence. In fact it is only when a surplus of time, money, and talent is available that such benefits begin to emerge. Perhaps it should also be pointed out that this truism does not preclude emerging societies from devoting considerable energy to creature comforts long before its people are adequately fed, clothed, and housed. Nor does it preclude individual members of an affluent society from going hungry while watching the latest wonders on television.

Turning now to education, I'm certain all of you are familiar with the oft-mentioned charge that it takes twenty to forty years to obtain change at the local level in education. Unfortunately the statement is almost never used with reference to a specific process, technique, or concept so that it is virtually impossible to evaluate the validity of the expression. In a way it's a little like telling your friendly apartment-building M.D. that you haven't felt well for ages and then expecting him to know exactly what is wrong and to prescribe an immediately effective cure. While most M.D.'s can walk on water--or at least across a wet golf course--without getting their feet wet, more precise data is required to practice their craft.

But it is neither the lack of specificity nor the number of years used in the change which concerns me. Rather it is the implicit belief that change is a priori desirable. Naturally we don't believe in change for the sake of change and really we've never believed in any manner antithetical to this principle. All the conveniences and comforts we seek (and obtain) are not really conditioned responses to the marketplace but carefully reasoned responses by discerning individuals who can recognize and evaluate a genuine breakthrough when they see one.

In examining the critics' charge further, I believe it is essential that we remind ourselves that we do indeed live in a system which equates new models with improvement. From their point of view we in education have been a long time in bringing out a new and improved product. And if technological innovation can take man to the moon and back, surely some changes can and should be made in education. Educators obviously are dumbbells incorrigible in their resistance to change and since they are unwilling to voluntarily make changes to improve their product, "we" must do it for them via ever more prescriptive legislation and the voucher system. Naturally one of the things which has made America great and brought all these new breakthroughs is the free enterprise system and healthy competition.

Are the critics correct?

Frankly I'm not certain. I think they err in implying that there have not been changes in education over the past forty years. Certainly the way we treat atypical behavior and performance has changed for the better as witness the whole special education movement as a paramount example. But I think the general dissatisfaction voiced by critics is related to more tangible items - the basic academic skills of pupils, their social behavior, and increased costs. Too many pupils still can't read, too many youths are dirty, disrespectful, and lazy, and costs are far too high. Regardless of the source of the dissatisfaction, a current attitude seems to be that the schools could do a better job if they really wanted to and tried a little harder. Considering the fact that the schools typically enroll students for no more than 50% of the days in a year, and/the days the pupils are in school, about half of the awake time is spent on non-school activities, the wonder is not why the schools do so little but rather how they can do so much. For having the raw material only one-quarter of the time, the product is remarkably good.

Further, that during

The question still remains of how the product could be improved in quality without a vast increase in production costs. Could we utilize recent developments in a new more effective educational technology? I think the answer is "yes" if we keep four things very clearly in mind:

1. Our social and economic system has rapidly become conditioned to expect any change in product or process with improvement in the name, regardless of any uniform consistent positive relationship between the two.
2. The change that education has adopted change much too rapidly when the typical consumer is probably well founded. But such time has likewise provided an opportunity to identify genuine improvements as distinct from changed model numbers.
3. Contemporary technology is expanding at a geometric rate and its not inconsiderable contributions are generating pressures for its application to a vast array of problems - appropriate and inappropriate.
4. Much of contemporary technology is appropriate to education and its adoption rate can be increased and the time required minimized by the use of selected guidelines.

Given the last item, the question quite naturally follows: "What are such guidelines?" And perhaps a related question is: "What technology?" The second is too broad to attempt to answer here but I'll try to provide illustrative examples of what I would include within the framework of my suggested guidelines, as follows:

1. Define the overall educational goals for the school system and its individual schools if required. This might be considered the basic "what we are about" or "why are we here" statement.

2. Define the overall educational goals for the participants. This refers to terminal behavior once they are ready to leave the system.

3. Define the behavioral objectives for participants at various levels and in various competency areas. While this term is currently experiencing considerable use in education it has been used in industry for a number of years, and even before the use of the formal term developed, the same type of analysis was widely employed - in job descriptions and in setting piece-work rates for example.

4. Define the performance criteria for participants. This is the familiar "how do I know that you know?" question stated in specific quantifiable terms. Those of you who have worked on thorough articulated scope and sequence guides will recognize that both behavioral objectives and performance criteria were frequently included without benefit of current terminology.

5. Identify the processes methods employed to achieve the above objectives. Here we are talking about personnel, what they do, why, how often, etc. This should be further broken-down into the component programs, such as compensatory and special education, and in a comprehensive analysis it would include

areas such as music, art and P. E. The technique of system analysis begins to be very important here.

6. Identify the resources necessary to support the above. This includes the human and plant resources and again should be broken-down into various programs. The level of skills required of personnel is also important. It is here that program budgeting begins to be vital.

7. Identify the costs required to conduct the above programs. For special education it is essential to include direct and indirect items and installation as well as maintenance costs.

8. Examine alternative processes/methods to those presently in use in item number five. Here is where the change of educational fact-dragging is most often lodged and at the same time the point at which change is most often equated with a genuine improvement - and sometimes a break-through. Changes under consideration must be evaluated in terms of goals, behavioral objectives, performance criteria as well as the required personnel, process, and methods. Seduction by hardware is often exciting at this point.

9. Examine the changed resources which may be required by possible alternatives. Unfortunately a tendency exists to minimize the long-term implications when a new editor is on the scene - as you know tomorrow always wears a halo under such circumstances.

10. Examine the changed costs attributable to the alternatives

under consideration. Business Managers are usually very good at this and in fact often have to be reminded that their new computations include areas which legitimately should also have been included in costs for existing programs but somehow were neglected. In practice this step is often combined with items numbers eight and nine above to form a program costs/benefits package.

One suggestion which may be of value to you here is simply this; do not overlook the costs of not doing something. For example, the reduced rate of retention attributable to a hearning disabilities resource teacher program means a real dollar and cents saving in both operating and capital expense which must be contrasted to the new program expense. In short, the cost of not doing anything is reflected in increased product expense.

11. Select from alternatives or continue the existing program. Presumably new improvements with a favorable cost/benefit ratio have been located and an intelligent choice will now be made. Staff to be affected or at least their representatives should have been included in the prior steps. Sometimes, of course, a careful investigation will not reveal conclusive answers and a local pilot project will be the next step.

At this point it seems appropriate to pause and reflect that what is suggested requires a substantial investment in time and energy and certainly there ought to be an easier way. To this I readily agree but the only

short-cut I know of is to take somebody else's word for it from another school or from the research and/or to have it imposed from the top - either in or out of education. Certainly there are instances in which either of the latter approaches may be unavoidable or even desirable, but in general the long way seems valuable for at least three reasons: (1) it provides a better internal understanding of existing objectives and programs, (2) it maximizes the likelihood that any change adopted will be given adequate support and will continue in operation, and (3) it provides a system for thoroughly considering possible future changes. Obviously not all schools considering a change will have all the internal resources needed to do a comprehensive job and help should certainly be sought from outside organizations and personnel, and here I would like to suggest that local non-educators often are surprisingly helpful in arriving at final recommendations. This includes parents as well as the more usual lawyer or store owner.

Assuming now that a recommendation has been made and accepted as the result of step number eleven, what is essential to make it work?

12. Participating staff must thoroughly understand the program goals and their performance expectations. This is another common failure point at the local level. It seems obvious but is regularly overlooked by those within a given school system and especially by those who come from without and tend to think everybody understands their new project as well as they do.

13. Attempt to generate positive support for the change among as many persons as possible. First, of course, come those

who will be directly responsible for implementing the change, but others in the system can easily negate a good change through lack of support. I'm certain most of you know of examples from the field of mental retardation. Understanding is not the same as active support and reservations and concerns should be honestly dealt with.

14. Provide adequate pre-change in-service. If you expect new behavior from essential staff, make certain they are able to function in the required manner.

15. Make certain the necessary tools are available when the change is initiated. As used here, tools mean space, funds, equipment and supplies.

16. Provide systematic assistance to participating staff during the change and establishment phases. Over-and-over again I talk to "outside" educational specialists who have followed all previous steps and who are in despair over the fact that they feel "nothing is happening" when they return six or nine months later. Almost universally the major reason is lack of regular, consistent support, especially during the first thirty to ninety days after initiation of the change.

17. Provide a method of obtaining direct participant feed-back. This does not mean questionnaires, rating scales, test scores or other written responses which are "sent in", but rather regular opportunities for direct face-to-face discussions among all local participants, including central

office personnel, middle management (the Principal) and any outside personnel.

18. Treat the teacher as an equal and give genuine consideration to his suggestions for modifications. Despite our best programming, 20,000 school districts and nearly fifty million school-age pupils ensure considerable demand for individualizing change. Local difficulty with a program successful in another area or in the laboratory does not automatically indicate poor teaching or recalcitrant administrators. Making adjustments upon teacher recommendations not only increases his involvement - but he may be right!

19. Be honest and comprehensive in conducting evaluations. The Hawthorne Effect occurs among adult participants as well as among students. And of course the originator of an adopted idea is often subject to the Ego Effect. Proper advance planning will contain areas for evaluation but frequently this is limited to short-term effects on the direct recipients of change and does not include adequate attention to long-term primary and secondary consequences. A broad evaluation can avoid a false impression of accomplishment, help close the credibility gap, and point the way for further changes. As a personal suggestion, I believe student participants should have a direct personal input into the evaluation process whenever possible.

All right, you may say, all this is fine but it still seems to miss some of the "gig" involved in trying new ideas. Again, I certainly agree but would like to offer two more observations before going on to the twentieth and last point:(1) education, unlike the rest of our society, does not have a surplus of time, money, and talent to devote to annual new models. We need to be very careful that the change really is an improvement, and (2) only by a very thorough knowledge of our present circumstances can we know where we are, where we want to be, and what is still lacking. And this leads to my last point:

20. Actively seek new ideas both from within and without the traditional field of public education. This includes reports from federally-supported activities such as the Regional Education Laboratories, E.S.E.A. Title III projects - activities which do have risk capital, time, and talent. It includes military and industrial educational programs. It includes the continuing education programs of the American Bar Association, the American Medical Association and other professional groups. And it includes reviewing journals, magazines,exhibits, and the like from as many fields as possible with a view to what can be used or adapted to your own needs.

As one who has spent many, many hours working for change at local, state, and college levels, I'm convinced that positive change can be effected against odds that often seem overwhelming. But chance of success is increased immeasurably when solid preparation has been done beforehand. In reality, there is no other approach if we are to prove the critics wrong.

EDO 47440

ADOPTION OF INSTRUCTIONAL TECHNOLOGY

Marguerite Thorsell
Kansas State Department of Education

INTRODUCTION

Since the Kansas Plan of Curriculum Development and Instructional Improvement for the Mentally Retarded represents a drastic departure from most programs in both general education and special education, it appears that it is in order to provide a frame of reference to which later comments can be related.

1. There are currently 500 teachers of educable and trainable who are working in a multiplicity of program organizations in Kansas. It is anticipated that there will be 900 certified personnel by September, 1974.
2. Kansas theoretical model was field developed over a three-year period and is currently in the second year of statewide implementation. This model is highly academic and is validated through multiple concepts from the literature by Piaget, Bruner, Bloom, and Krathwohl.
3. The Kansas Plan merges curriculum development and implementation to that of one and the same.
4. Structure of content relationships represent a progression of learner behaviors from preschool through adult living for both the educable and trainable.
5. The Plan proceeds beyond task analysis to identify lasting life process or procedure for content situations

(synthesizations) in order to prepare the learner for a fluid and complex society.

6. Teachers learn the procedure through a program geared to that of continuing higher orders of concept development. It should be noted that this approach is the same as that used with the learners.

7. Field development and implementation are dependent upon leadership personnel from the teaching ranks who are identified and trained for a range of leadership roles.

ACCOUNTABILITY

Accountability can readily be identified with a phrase from the past - "received the age of accountability." This phrase implied that the individual was now expected to be able to assume responsibility for what he did. At the same time he was expected to be able to justify and/or clarify WHY and HOW he arrived at that behavior and to face up to the CONSEQUENCES resulting from that behavior.

Accountability in education has promise in that it means that we must be responsible for justification and charting of our course of action in order to improve the consequences or the end result. Therefore, it is no longer adequate to justify our budget requests for funds through the use of numbers of programs or children and youth served. In short, we must now show HOW and WHAT we will be doing and HOW we will be organized at both the administrative and instructional level. Accountability, then, cannot be separated from the systems approach (planning by objectives) as they become interdependent. However, this interdependence must proceed beyond that of "putting all our eggs in one

tested," namely, ability to write behavioral objectives which are measurable.

Within the limited time period, I will attempt to present only a sampling of the many facets of the Kansas Plan which are designed for the purpose of delivery of accountability at both the State and local level.

1. Teacher as the major point of focus since they are the ones who must account for what happens in the instructional settings for which they are responsible. This approach results from the study of literature and observation of practice as it relates to new technology in mathematics and science.

Curriculum implementation and development are merged. Therefore, the emphasis moves away from immediacy of prodeveloped materials in the hands of teachers to that of beginning with the here and now in order to bring about change in the instruction and learning process. Kansas teachers, then, participate in inservice patterned after sensitivity training programs in that they are required through small group interaction to look at the what, how, why, if, and resulting CONSEQUENCES of the instructional program which they provide.

As one local Coordinator of Mental Retardation aptly stated, "We are requiring that teachers make a 180° turn and look at themselves all the while." Here is the first application of accountability - that of self evaluation which is moved to

peer evaluation with justification required by both parties.

Kansas teachers, then, begin a program of concept development related to actual instructional practice in areas such as (a) on-the-spot evaluation for making change while instruction and learning is in process, (b) management of instructional groups, (c) establishment of readiness level for a given teaching situation, (d) establishment of relationships among components of the instruction and learning process, (e) relationships of cognitive and affective approaches to the learning process, and (f) establishment of content relationships (structure) within the content area of Practical Aspects of Daily Living.

2. Program Planning by measurable inter-related state and local objectives. The program area of mental retardation in Kansas has used program objectives for the past two years and has included objectives for inservice training in the Kansas Handbook for curriculum development and instructional improvement.

During the 1970 statewide leadership conference, trained local teacher leaders began planning which moves local and regional inservice groups to that of planning by objectives that are directly related to statewide objectives. Since the State Department of Education is moving to that of field developed global objectives, the current revision of statewide objectives in the program area of mental

relardation will be directly related to the more global standards objectives of education.

An example of the inter-relationship of state and local objectives are those related to content structure.

Example:

State Program Area Objective:

Develop content structure through the identification of testing life processes in each of the eight Resource Areas of Practical Aspects of Daily Living. Relate each testing life process to one or more adult living behavior for both the educable and trainable.

Use of a Progression of Related Local Activities and Objectives:

Evaluate and partially justify relevancy of current social studies content for one week through application of criterion measures provided in the Career Handbook.

Use of a Progression of Several Related State Activities and Objectives:

Utilize previously identified testing life processes for each Resource Area to establish a content relationship to an interesting career training session.

Figure 1 provides an example of the products resulting from the last stated objective. One can readily determine that concepts related to the establishment of readiness for the task at hand were moved to this activity to identify prevocational entry behaviors as well as adult behaviors for each testing life process.

FIGURE 1 - Model for Content Structure

ADULT LIVING
ENV: Recognizes roles of Specific authority figures and Establishes Personal communication for purposes of seeking clarification and assistance when needed, and to Express own or family interest and needs.
Authority Figures
ENV: Relates authority figures to their specific role, interests and cooperates with authority figures; accepts and identifies with his/her legal guardian and/or individual responsible for Supervision of his activities.
ENTRY BEHAVIOR: Follows directions of person responsible for care without always knowing why.
PRE SCHOOL

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PUBLIC SUPPORT

Traditionally education has advocated public and/or lay involvement in curriculum development and instructional changes. Perhaps, more critical than public involvement in the adoption of new technology is that of support and/or involvement of members from our own professional ranks. Since current educational technology represents a radical departure from present practice, it can be assumed that implementation may result in fear of the unknown for some teachers, supervisors, principals, directors of special education, superintendents, teacher trainers, researchers, and evaluation specialists. This fear of the unknown could result in (1) non-participation and maintenance of the status quo, (2) verbal criticism which includes only negative comments rather than a combination of negative and positive evaluations which are necessary for charting a course of action, or (3) application of only a portion of the new technology as a veneer to current practice for an approach of administrative tinkering rather than implementation.

It is our belief that teachers as potential users of the product have far more capabilities than that usually stated and that those with leadership abilities should receive psychological rewards in the form of professional recognition. Therefore, field development and implementation in Kansas are dependent upon leadership personnel from the teaching ranks who are identified and field trained for a range of leadership roles. This approach closely approximates that used in business and industry rather than education. A leader, then, may be a teacher who has a baccalaureate rather than a masters degree, may or may not have completed the full course sequence of training in mental retardation, and may be sixty-five or twenty-three.

We have not bypassed the local administrator for they as well as teacher leaders assume responsibility both for the identification and employment of leadership personnel. In addition, each leadership teacher must function directly with a member of the local administrative staff for planning and communication with other administrators in the study group area.

The 1969-70 school year was the first year of statewide implementation. We began (1) without a trained teacher leader in each of the 26 study group regions, (2) without college credit, (3) without payment for participation or leadership role, (4) with more than one-half of the 300 teachers of educable mentally retarded having little or no prior knowledge of the plan, and (5) with no guarantee of any release time for inservice.

The results of the first year activities for statewide inservice are as follows:

1. All but 23 of the 300 teachers of the educable mentally retarded provided some participation for more than 90% participation. Current year activities indicate that we will closely approach full participation.

2. More than one-third of the teachers of the trainable participated, and their participation resulted in the realization that there is a close relationship between the content structure for the educable and the trainable.

3. One study group area provided full release time while approximately one-third of the study groups were given release time of either one-half day or one hour. During the current school year eleven additional school districts are providing either one-half day or one full day for inservice training.

Other Evidence of Professional Support:

1. Last year we began the first program of a trained curriculum specialist (Title VI funded for three years before phasing into local and state funding) who devotes time to that of

improvement of instruction as opposed to serving in administrative role.

a) Two additional programs supported by local and state foundation and special education funds were initiated during the 1970-71 school year.

b) A rural area program closely aligned with an Associate Instructional Materials Center has been approved as a Title III Project for next school year. Another rural program to be funded as a part of Title VI is in preparation.

2. The Associate Instructional Materials Centers have cooperated with the State office to provide four two-day institutes designed to identify and train leadership teachers of mentally retarded in production of graphic instructional materials. This procedure is for the purpose of movement of these centers to that of related instructional materials production and depositories.

3. Fourteen participants from 6 states have been a part of the three-week intensive summer training sessions. Kansas funding has been through use of P.L. 85-926 funds while Regional Special Education Instructional Materials Center at University of Kansas funded seven of out-of-state participants during the past summer.

a) Colorado has initiated and is implementing a state program of action and has established a working relationship with the Kansas Plan.

b) One additional state is currently exploring arrangements for implementation and continued communication with the Kansas Plan activities.

4. Staff from two teacher training programs chose to monitor in-service training groups this year in order to gain greater insight into inservice activities and concepts. (Fort Hays State College and Kansas State University of Wichita)

5. One teacher trainer participated in an intensive summer training session as a trainee. (University of Kansas)

6. One teacher training program cooperated with State Department of Education to fund and administer summer training session which related curriculum and instruction for the trainable to that for the educable. (Fort Hays State College)

7. A group of leadership teachers and administrators requested that one of the summer intensive institutes be devoted to advanced leadership training concerned with refinement of written content and of techniques used for training teachers to write Teaching Sequences.

SELF RENEWAL

With the national trend of financial belt tightening, the current period of time is not necessarily the most promising for that of continuation of programs which were started through the use of federal funds for Research and Demonstration. Therefore, many programs which did produce results and have shown high degrees of promise and support are unable to continue.

Since the development of the Kansas Plan operated for four years near the poverty level and was required to utilize other federal funds, local funds, state funds, and unpaid labor for many of the related functions, we were in a sense "conditioned" if not prepared for the current situation. Kansas has a legislated tax lid of 105% for local school districts, a stated policy that all state agencies must hold the line on budgets to that of previous fiscal year unless they have a legislative mandated program. The program area of mental retardation in State Department of Education does have a mandate to meet as of September, 1974.

Within the above frame of reference, the following can be cited as indications that the Kansas Plan of Curriculum Development and Instructional Improvement is becoming a part of the program activities at both the state and local level.

1. During the 1969-70 school year the state program manual in mental retardation was rewritten with input from the field.
    a) Figure 2 provides range of program reorganizations which are possible through designated staff responsibilities.

Figure 2

PROGRAM REORGANIZATION THROUGH STAFF RESPONSIBILITIES

- Teacher Unit
  - Single Teacher Unit
  - Single Teacher and Aide Unit
    - 1 aide
    - 2 aides
  - Team Teaching Unit
    - (aides, multiple teachers, work placement)
  - Itinerant Teacher Unit
- Other
  - Curriculum Specialist
  - Coordinator of Mental Retardation
  - Vocational Teacher of Consumer Education
  - Work Placement Specialist
  - Itinerant Special Education Teacher in Vocational School

Clarence Pihl
State Department of Education

b) Emphasis is given to that of establishment of a range of learning centers within instructional facility.

c) Figure 3 presents the curriculum committees and work groups for continuing implementation of the Kansas Plan.

d) Figure 4 presents the hierarchy of objectives for curriculum development and instructional improvement. Program manual lists some twenty objectives with which the Advisory and Administrative Committees will be concerned in relating to the hierarchy.

2. Figure 5 presents the types of inservice which have been previously used and will be continued in implementation. In addition, several school districts are planning related programs of aide training, media production, etc.

3. One teacher training program has stated criterion measure that student teachers will be assigned only to districts which have an active inservice training program for the Kansas Plan.

4. Two local districts are using study group teacher leaders as team members planning inservice for regular education. One of these superintendents is working with a plan to provide a pilot program for regular education.

5. Continuation of state office three staff and secretary and printing budget through use of Title VI administrative funds.

6. Teacher leaders have a common objective of more teacher involvement of group participants for the purpose of identifying additional leadership personnel with a range of abilities. Our goal is to have at least two trained teacher leaders in each region.

7. Teacher leaders have initiated regional planning for coordination of efforts and sharing of ideas.

8. Two states are coordinating their related summer activities of the Kansas Plan in order to share training experiences and consultation.

Figure 3

CURRICULUM COMMITTEES AND WORK GROUPS FOR STATEWIDE IMPLEMENTATION

- Administrative Committees
  - Advisory Committee
  - Administrative Planning Committee
- Work Groups
  - Content Coordination
  - Instructional Materials
  - Rewriting Groups
  - Field Testing and Evaluation

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Figure 4

HIERARCHY OF OBJECTIVES FOR CURRICULUM DEVELOPMENT AND INSTRUCTIONAL IMPROVEMENT

Kansas Files
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Figure 5

TYPES OF INSERVICE FOR STATEWIDE IMPLEMENTATION

- Intensive Short Term Inservice
  - 3 Week Leadership Training (Initial)
  - 3 Week Advanced Leadership (Content Movement)
  - 2 Day Statewide Planning and Coordination (Total Leaders)
  - 6 Week Comprehensive Establish Relationship Between EMR and TMR

- Related Short Term
  - 2 Day Media and Graphic Production Techniques
  - 3 Week Related Instructional Materials

- School Year (Continuing)
  - Local and Regional Scheduling and Planning

Marcus Pike
State Department of Education

In closing, I would like to personally comment that we placed our confidence and faith in the abilities of teachers. Four years of field activity indicate that our choice was wise. I am now more confident that teachers of the mentally retarded can implement new instructional technology at a high professional level of competence.

ED 047 040

ADOPTION OF INSTRUCTIONAL TECHNOLOGY

Mary Anne Crocker
Federal Programs, Jefferson, Ohio

Instructional Technology has been with us since the days of early man. Although he had no sophisticated tools, he was able to educate his mate.

During the nineteenth century the textbook and chalkboard were widely adopted as teaching tools to fulfill societies' need for literacy. In the past three decades, Instructional Technology has expanded rapidly. The needs of society have changed radically. Yet each new device or strategy or theory has been added to the nineteenth century classroom in a fashion that resembles "the mad doctor with a box of curelts".

Adoption of Instructional Technology will come only with public support, and public support will be given only when we can demonstrate that the implementation of new Instructional Technology will lead to the fulfillment of consumer needs. We must begin with a system of plans based on an assessment of present and predicted consumer needs. We must begin with a system of plans based on an assessment of present and predicted consumer needs. Of what use is it to train camel drivers for a society that has no camels!!

In Ashtabula County, Ohio, the following planning assumptions were made on the basis of assessed consumer needs:

1. The community needs increasingly more occupationally adequate citizens for small machine shops, nursery work, metal service personnel and journeymen. The need for pre vocational people will increase in proportion to the increase in adequate non-professional people.

2. The community needs citizens who will assume civic responsibility in such areas as pollution, sanitation, safety on the highway and on the job.

3. The students need the opportunity to develop the occupational and civic skills that will help them become acceptable members of the community.

4. The students need the opportunity to master academic skills to the limit of their potential.

5. The faculty needs the opportunity to develop skill in implementing instructional technology to cope with the changing needs of the community and students.

A system of plans was developed and implemented toward meeting the needs of the Ashtabula County, Ohio consumers.

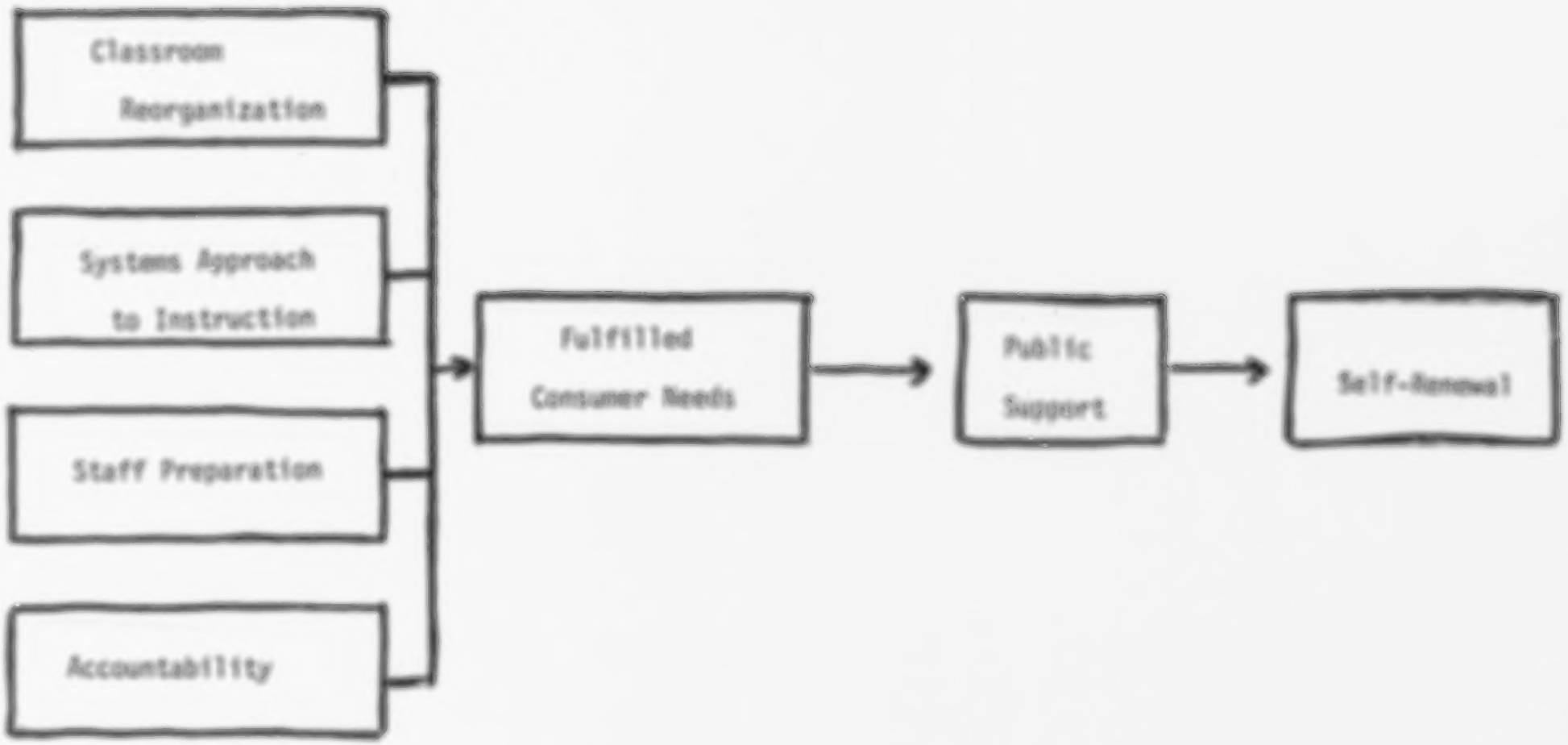
SYSTEM OF PLANS:

Occupational Simulation is the classroom reorganization model being implemented. Nursery-school children understand simulation. "You be the papa, I'll be the mama, you be the baby, and we'll play house. Okay!.". You don't need a standardized aptitude test to know whether this child has leadership potential. Have you ever noticed how much children have learned through everyday observation? The reorganization is taking place in the regular classrooms. This involves the physical environment and classroom management.

Physical Environment - Shoe boxes at the elementary level and locker space at the secondary level provide individual storage space for personal tools. An IN and OUT rack for student name cards make a simulated timeclock at the elementary level and real timeclocks are installed at the secondary level. Desks are permanent work stations holding pieces of audio-visual equipment, a kit or some instructional aid. A long table is set up for production line projects. Materials are grouped according to subject matter or tasks.

Classroom Management - Each student acknowledges his presence by "punching" a timeclock. Students receive a daily "worksheet" in their mailboxes each morning. As each "job" is completed, the "product" is put in the out box, and the student moves to the next job. The teacher moves about giving assistance to groups and/or individuals who are having difficulty. All students, primary through high school are expected to operate the equipment in their room. They are given a certificate of competency for each piece of equipment they operate independently.

SYSTEM OF PLANS FOR ADOPTION OF INSTRUCTIONAL TECHNOLOGY



Directive Teaching, a systems approach to instruction developed by Dr. Thomas Stephens, is being conducted. This plan has four steps:

Gathering Descriptive Information - The teacher informally determines the skills the student has mastered, his proficiency in using each of the expressive modalities, his learning behavior, and his preferred reward system.

Directive Teaching Plan - Based on the above information, she sets tasks with specifically stated terminal criteria and planned reinforcement.

Implementation - The teaching plan is implemented using stated approach and pre-selected material.

Evaluation - The stated terminal criteria is the evaluation criterion.

Directive teaching determines the skill to be learned, teaches the skill and evaluates the skill taught. Note the difference between this approach and Mager's description of the traditional approach.

Objective: Non-Toilet Wall Writing
Monday - Introduction to Non-Writing
Tuesday - History of Non-Writing
Wednesday - Toilet Appreciation
Thursday - Famous Johns and Their Dastardly Defacement
Friday - Pot Power

Occupational Curriculum has been implemented. The skills (reading writing, arithmetic are practiced within a occupational and daily living contexts. Social studies center around events affecting the student's everyday world. At the secondary level in-school jobs and our-of-school jobs are required curriculum. This involves banking, credit unions and solving transportation problems as well as other job related problems.

Occupational Tools and Materials are audio-visual equipment and teaching aids. Consumable materials are used only when essential. To the extent possible, consumable materials are used in a non-consumable manner. For example plastic overlays are used on workbooks and ditto sheets.

STEPS IN DIRECTIVE TEACHING

A. Gather Descriptive Information

1. Assessment of Academic Skills
2. Assessment of Expressive Modalities
3. Assessment of Behavior
4. Assessment of Reward System

B. Devise a Directive Teaching Plan

1. Set Tasks
2. Establish Terminal Criteria
3. Set Reinforcement

C. Implement Teaching Plan

1. Using Stated Approach
2. Using Pre-selected Equipment and Materials

D. Evaluate Instruction

1. With Terminal Criteria

Teacher Inservice is aimed at the specific program she is expected to implement. Inservice training is conducted in Directive Teaching, Simulation, Curriculum Development, and Selection, Adaptation and Preparation of Instructional Material to meet the stated pupil objectives. Inservice education is accomplished on a one-day-a-month released time per teacher, live-in workshops with children consultant follow-up in the classroom, and paid extra time. College credit toward certification is given by nearby Lake Erie College for most of the extra time training.

This ladies and gentlemen are but two of the PLANS essential to the Adoption of Instructional Technology. The next two panel members will present two more plans essential to the System of Plans for Adoption of Instructional Technology.

PUBLIC SUPPORT FOR ADOPTION OF INSTRUCTIONAL TECHNOLOGY

Public support has been forthcoming in Ashtabula County, Ohio because consumer needs are being fulfilled. The following evidence speaks for itself:

> Community - Twenty-seven full time employees are working in the community. Employers have rated the work performance of twenty-two of them as the same or better than their usual work group.
>
> Students - In two years eleven students have graduated from high school. All are gainfully employed. The primary group (N=51) attained predicted achievement in reading and arithmetic. The intermediate group (N=40) attained predicted achievement in reading and arithmetic. The upper elementary group (N=54) attained predicted achievement in arithmetic.
>
> Faculty - In september of the first year, eight out of nineteen teachers were fully certificated. By June of the second year, nineteen out of twenty-two teachers were fully certificated.

The Ashtabula program has received widespread and enthusiastic support. Time permits the mentioning of just a few examples.

1. The state and local health agencies joined forces with the APPEI staff in bringing the Pediatric Otological Diagnostic Clinic to the County.

2. The Ohio Bureau of Vocational Rehabilitation have set up an office in the County and are providing physical examinations and physical restoration and counseling for all secondary students in the program.

3. Daily "occupational lab training" is being provided on a one to one basis for high school sophomores. These are conducted in Joint Vocational Education School facilities.

4. Lake Erie College has provided the instructor for in-service training; and has given college credit toward certification.

5. The American Red Cross has provided First Aid training for the faculty.

6. The TV station Channel 25 in Cleveland televised the 30-minute film made by the project.

7. The TV Channel 12 in Erie, Pa. televised the fim as a regular afternoon movie. The two stations reached a viewing audience of approximately 60,000 persons.

8. Seven newspapers in northeastern Ohio gave 733 column inches and 219 pictures to bring the program to the attention of the community.

9. The total program phased out under state and local funds and is being expanded.

10. Two more Title VI grants have been received for an Instructional Materials Program.

11. Two research grants have been received for new programs.

12. One local district superintendent closed a building and moved 150 children into other buildings so that he would have sufficient funds to continue the programs.

LOCAL- STATE - FEDERAL FUNDING

Project Year	Local Effort	State Funding	Federal Support	Total
1968 - 69	$129,700.	$126,318.	$275,000.	$531,018.
1969 - 70	$149,228.	$154,587.	$240,830.	$544,640.
1970 - 71	$313,482.	$441,180.	00.	$ 793,162.
1971 - 72	$594,690.	$882,360.	00.	$1,477,050.

EDO 47440

MEDIA AND CURRICULUM RESEARCH: IMPLICATIONS FOR IMPROVED PROGRAM DEVELOPMENT

Jenny B. Armstrong
University of Wisconsin RDCC

Within the past three or four years there has been increased emphasis placed upon "accountability" (Lessinger, 1969). In education, evidences of "accountability" have been apparent not only in the expenditure of funds, but also in the utilization of children's time both in school programs (e.g. as evidenced by the funding of the National Assessment and the Texarkana project's patterns of performance contracting) and in the day to day activities of children (e.g. the funding of such program development projects for television as Sesame Street to reach the pre-schooler).

Accountability in education is best defined in terms of its several components (see figure 1). Accountability must be viewed in terms of the objectives to be reached within the restraints of certain expenditures of time and funds. This leads to evaluation.

Consequently, increased interest in accountability has logically led to an increase in the efforts of professionals in the area of evaluation. This is evidenced by the major publications which have come out in the past three or four years in this area (Bloom, 1967; Tyler, Gagne, & Scriven, 1967; Tyler, 1969; American Institutes for Research, 1970; Glass, 1970).

The major contribution of much of this literature has been the definition of terms for meaningful communication and work in the area. For example, definitive statements have been made which serve to analyze and describe the basic differences and similarities between research and evaluation (Hemphill, 1969; Suchman, 1969).

These descriptions can best be summed up in two components models (see figures 2 and 3). Here, evaluation is seen as the process of ascertaining by a defined method the relative success of certain objects, social systems, organizations or institutions, projects or operations, programs, methods or materials in meeting specified objectives according to an apriori set standard (see figure 2). Research is viewed as the process of examining, utilizing the scientific method, the interrelationship of various input variables to determine their relative effect on certain output criterion. Media and curriculum research, that is, research specific to media and curricula, refers to investigations designed to examine the interrelationships of particular curriculum and media variables as they affect the output criterion of pupil learning. Evaluation of instructional program (curricula) and materials (media) is the process of determining by some specified method the extent to which certain curricula or media have met their objectives in accordance with some specified standard. Summative evaluation refers to evaluation the objective of which is to provide final judgements concerning the degree to which program objectives have been accomplished. Formative evaluation refers to evaluation the objective of which is to provide information for the refinement and improvement of the curricula or media to better meet the stated objectives according to a specified standard.

Attention, here, will be focused upon formative evaluation of curricula and curriculum and media research designed to provide information relevant to the development and improvement of educational programs.

Program Improvement Model. In general there are three major categories of concern in the development and improvement of educational programs: cognitive, affective and aesthetic (see figure 4). Cognitive concerns are those related to the dissemination of specific types of factual information. The cognitive domain, then, includes those objectives which deal with the recall or recognition of knowledge and the development of intellectual skills and abilities (Bloom, 1956). In general, program goals which are concerned with cognitive information are restated in the form of behavioral objectives (i.e., specifically what will the pupil or student be able to do as a result of participating in this particular program that he was previously unable to do).

Affective concerns are those which deal with the change of interests, attitudes, or values (Bloom, 1956). These are also stated in behavioral form for the facilitation of assessment. Examples of the specific statements of cognitive and affective category objectives of two programs developed at the University of Wisconsin IEIMC entitled, "A Saturday Afternoon" and "What Happens When You Steal?" are shown in Tables 1 and 2.

Esthetic concerns are those which deal with the "artistic" qualities of program design and development. Esthetic concerns fall into two different categories: those qualities which probably do affect cognitive and affective learning and those qualities which probably do not affect cognitive and affective learning.

The esthetic qualities of program design and development are much more difficult to objectify or define. Esthetic qualities which can be defined or objectified and then described as programming characteristics (curriculum and media variables) are classifiable as characteristics of programming known to affect, known not to affect, or having an unknown effect on pupil learning and, thus, become researchable and capable of being evaluated in terms of pupil learning. Determinations about the relative importance of these variables in affecting pupil learning can then be made through formative evaluation and research.

This scheme of categorization, known to affect, known not to affect and unknown affect, holds for programming characteristics derived from other than esthetic concerns as well. Information about the placement of programming characteristics within this scheme is best derived from carefully planned complementary programs of formative evaluation and curriculum and media research.

Although the number of curriculum and media research studies which have been designed to examine relevant programming characteristics and conducted in any rigorous manner is somewhat limited, from those conducted at least some information about the development and improvement of programs can be derived.

Some of the aspects of programming which have been shown by curriculum and media research and formative evaluation to affect cognitive learning are: 1) the pacing of information dissemination, 2) the positioning of information in dissemination chains, 3) the frequency with which information is disseminated, 4) the frequency of required pupil response, 5) the type of feedback given to pupil response, 6) the spacing; concentration of information per unit of time, 7) the instructional mode of presentation utilized. Some of the factors which have been found to affect affective learning are: 1) the amount of discrepancy in the

subjects' own cognitive structure which is introduced, 2) the relative power of the consequences portrayed in terms of the subjects' degree of belief in their reality.

Some of the factors which have been shown not to effect cognitive learning are: 1) the use of musical background so long as the db level of the music at crucial information dissemination points is kept below the db level of the narration which is disseminating the information, 2) color fidelity and clarity of slides or visuals unless color is a necessary factor involved in the program objectives or the reading of printed statements on the visual is hampered by blurring. Some of the factors which have been shown not to have any significant influence on affective learning are: 1) the provision of a musical background either in terms of attitudes toward the media or the social behavior, the consequences of which are being portrayed; 2) the direct presentation of facts about consequences without taking into account the psychological condition of the subjects for whom the program is designed.

Still other factors which frequently come up in the development and improvement of programs have an unknown effect on pupil learning. For example, hypotheses might legitimately be raised about the language style used in the writing of program scripts. One might argue, for example, that language written in the current vernacular or slang of an adolescent age sample might better reach them and therefore make them more attentive to the program thus increasing their cognitive learning. One might further argue that the more "turned on" by the program the subjects are the more apt they are to believe in the reality of the consequences of acts portrayed and, therefore, create the necessary conditions to change attitudes.

Some subliminal information regarding this has been found in our own research and evaluation work in contrasting two programs developed at the SEIMC ("A Saturday Afternoon" and "What Happens When You Steal?") at Wisconsin. "A Saturday Afternoon" was written much more in the style or vernacular of the adolescents for whom it was designed than was the script of "What Happens When You Steal?" Also, "A Saturday Afternoon" contained a much higher proportion of dialogue than narrative than the "What Happens When You Steal?" script. The average percentage of learning increase both in the cognitive and affective category was substantly greater for "A Saturday Afternoon" than for "What Happens When You Steal?". This learning difference, however, cannot be entirely attributed to the differences in language between the two programs since many other factors differed as well. It does, however, suggest an avenue for future curriculum and media research.

Another factor which has an unknown effect on pupil learning is, for lack of a better name, the amount of "SMALTZ." Visually "smaltz" can be introduced by dramatization (e.g., photograph of Mary with a tear in her eye taken from "What Happens When You Steal?"), shock appeal (e.g., photograph of policewoman unzipping Mary's dress in order to search her for other possible stolen items), special lighting effects (e.g., "juvenile department" sign taken from "What Happens When You Steal?"), and angle effects (e.g., accident scene from "A Saturday Afternoon"; store manager leering from "What Happens When You Steal?"). "Smaltz" can be introduced

auditorially through redundancy (e.g., the scripted line, "These are the memories she won't forget," taken from "What Happens When You Steal?") and through the qualities of the voice used in the narration of the program (e.g., professional or amateur).

Other special effects which can also be introduced, but which lack any definitive empirical evidence to date about their relative utility in affecting learning are visual and/or auditory flash back sequences (e.g., Mary remembering some of the consequences of stealing taken from "What Happens When You Steal?"), the selection of the music made (e.g., Lawrence Welk, Jethro Tull, Classical, Hard Rock, etc. to create arousal), or simulated effects (e.g., the simulation of a car accident in "A Saturday Afternoon").

All of these different essentially "aesthetic" features of program development can come to take a disproportionate amount of time in both program development and improvement as well as in research endeavors and formative evaluation programs. Even so, some of these unknown entities of programming certainly provide material for some of the most interesting and provocative research questions for those involved in instructional technology to pursue. Again, however in terms of accountability we must seek out those research variables which are most likely to have a profound effect on the learning of children with the minimum expenditure of funds and pupil time. Consequently, research projects which are merely interesting cannot always be pursued, nor can large amounts of time and money be spent on esthetic or artistic qualities of programming which have little pay off when it comes to pupil learning. Certainly, the task of determining the most critical factors on which to conduct curriculum and media research is in the right direction from earlier out of date determinations regarding the question of how to make program development and improvement decisions, merely on emotions or feelings or on empirically based scientifically conducted curriculum and media-like formative evaluation.

Figure 1. Accountability in Education

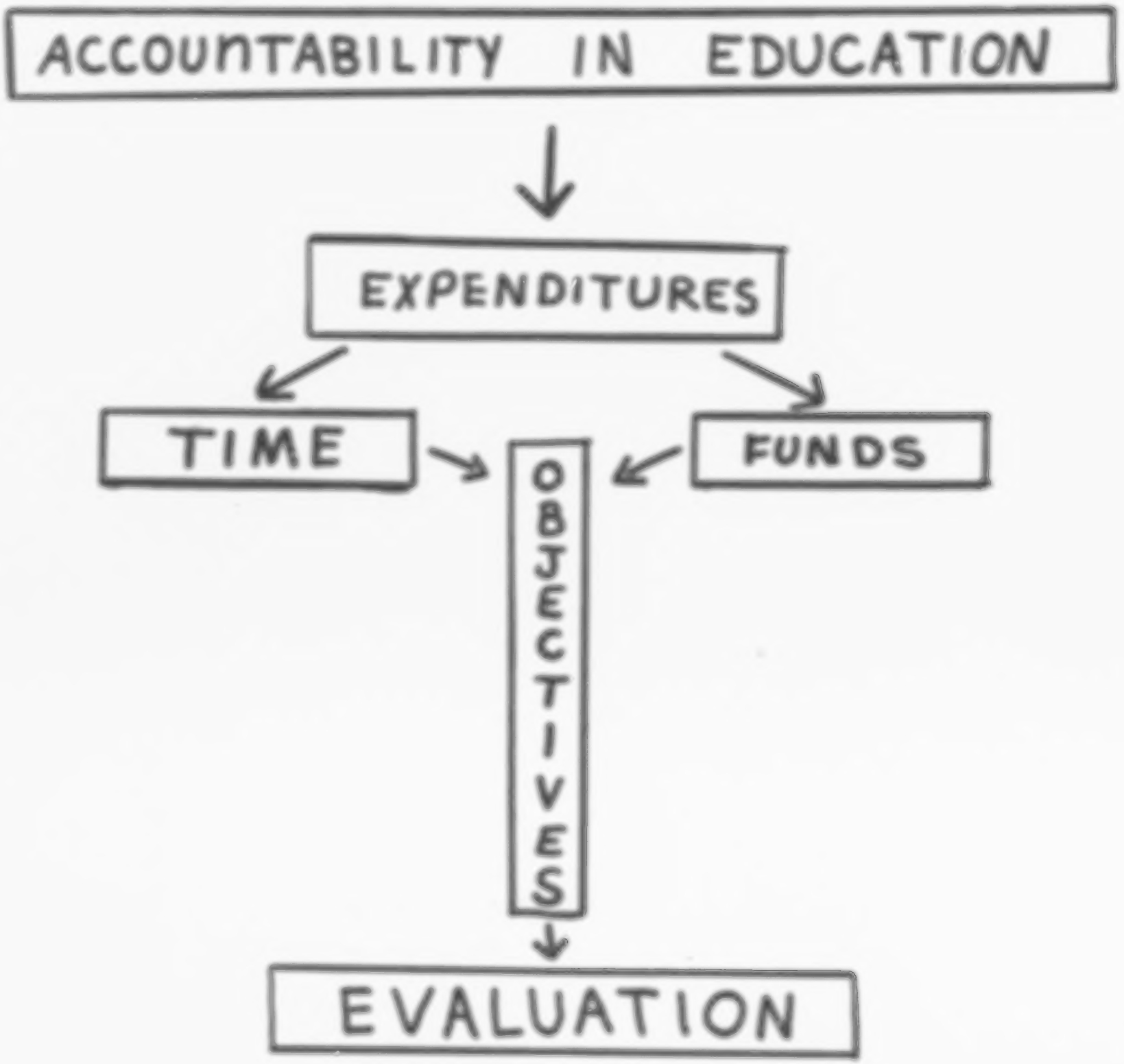


Figure 2. Evaluation Components

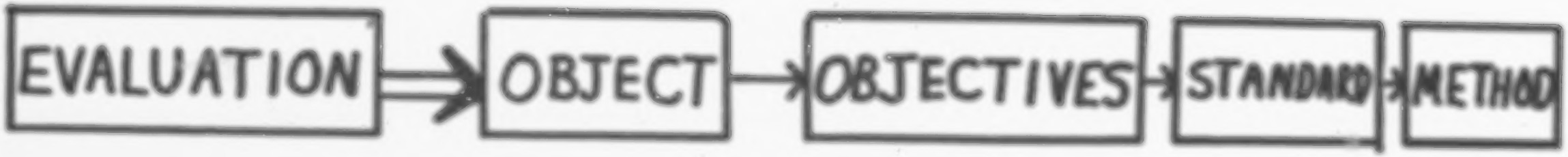
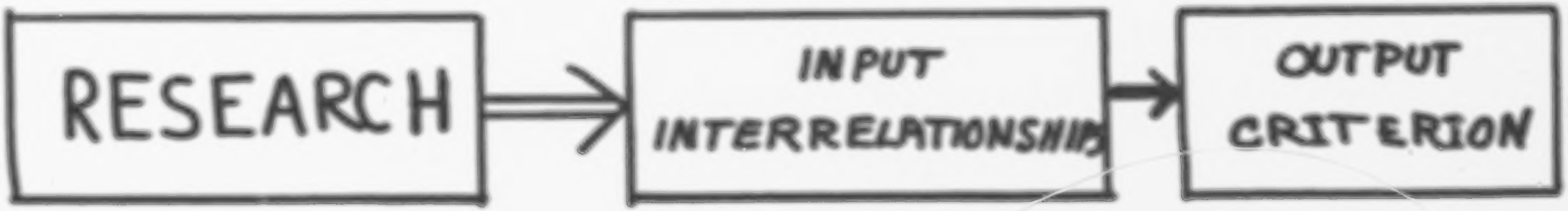


Figure 3. Research Components



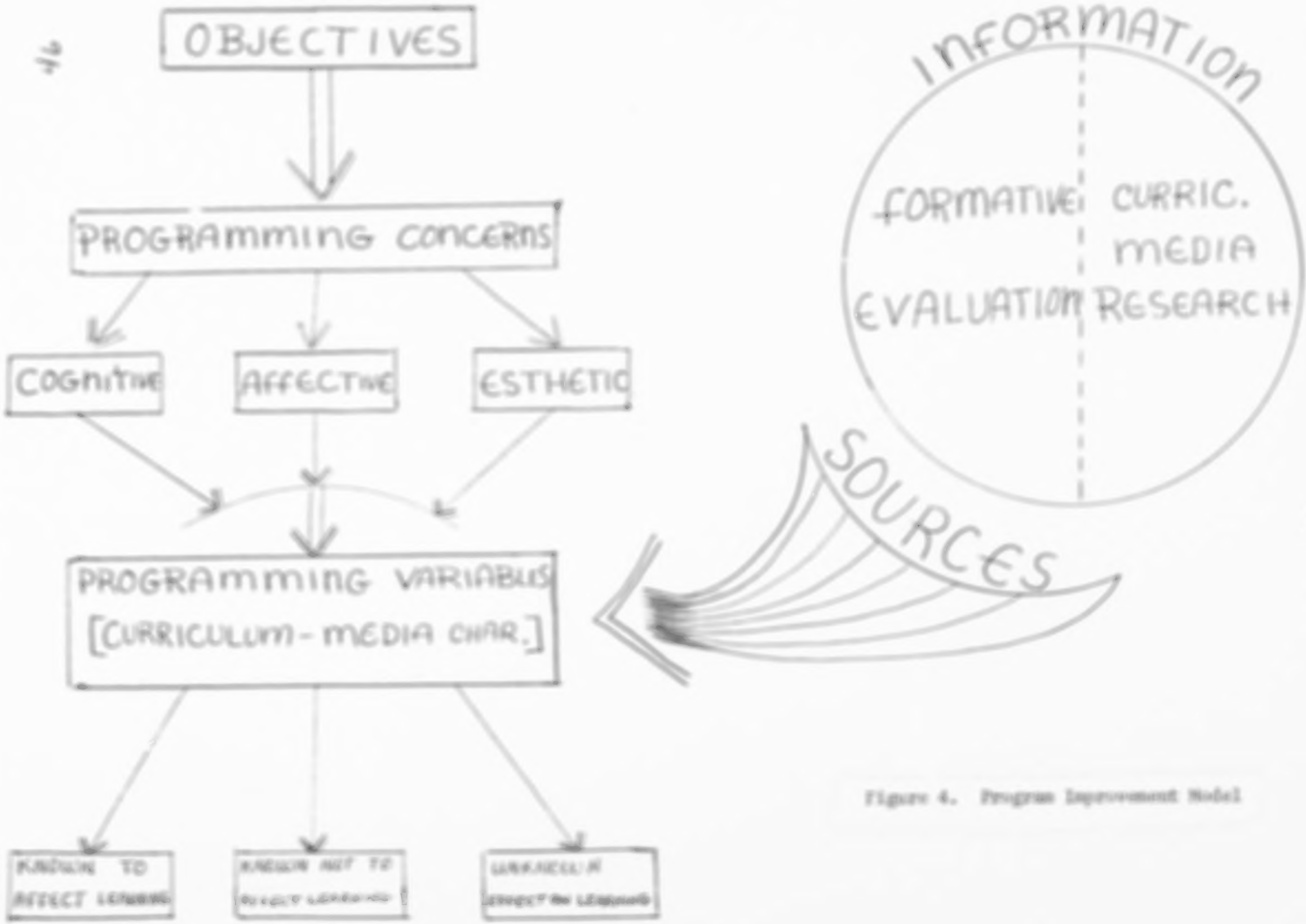


Figure 4. Program Improvement Model

APPENDIX I

Examples of Behavioral Objectives, Cognitive and Affective, for

" A Saturday Afternoon" and

" What Happens When You Steal?"

II. THE PROGRAM OBJECTIVES ARE:

A. INFORMATION DISSEMINATION

1. To acquaint students with the legal consequences of drinking when under the legal age. As a result of seeing this program, students should be able to demonstrate on the multiple choice test accompanying the program their ability to identify the following as consequences of being caught drinking when under the legal age:
    a. having a meeting with a juvenile officer.
    b. having to go to the police station.
2. To acquaint the students with the legal consequences of drinking and then driving a car when a juvenile. As a result of seeing this program, students should be able to demonstrate on the multiple choice test accompanying the program their ability to identify the following as consequences of being caught driving after drinking:
    a. having someone else drive them home.
    b. having their license suspended.
    c. possibly being sent to adult court.
    d. having to meet with a juvenile officer.
3. To acquaint students with auxiliary information about the legal codes of the state. As a result of seeing this program, students should be able to demonstrate on the multiple choice test which accompanies the program their ability to identify the following:
    a. the age range of persons considered by the state to be juveniles.
    b. the age level of the person when the juvenile record is destroyed.

c. the age at which persons in the state can legally drink beer.

d. that it is not legal to have beer in your car if younger than 18.

e. that the penalties for drinking and then driving a car are usually more severe if the individual is sent to adult court rather than to a juvenile officer.

B. INFLUENCE OF ATTITUDES

1. To influence students attitudes toward drinking and then driving and drinking when under the legal age limit. Pupils as a result of seeing this program should register on the multiple choice test which accompanies the program more negative attitudes toward the following:

   a. riding in a car when the driver has been drinking.

   b. drinking beer when under the legal age.

   c. driving after drinking.

   d. having beer in the car when under age.

   and more frequently respond positively to the statement:

   e. Drinking two cans of beer can effect a person's driving ability.

   and more frequently respond negatively to the statements:

   f. When it's legal to drink, it is safe to drive after you have been drinking.

   g. It is all right to drink beer if you are under age if you don't get caught.

II. THE MAJOR PROGRAM OBJECTIVE IS TO TEACH THE LEGAL CONSEQUENCES OF SHOPLIFTING

The primary objective of the program is to inform juvenile DNR students of the legal consequences of shoplifting. As a result of seeing this program, students should be able to demonstrate on the multiple choice test accompanying the program their ability to identify the following as the legal consequences of being caught shoplifting in (Dane County) Wisconsin.[1]

If a juvenile is caught shoplifting:

A. he is searched.

B. he is taken to the police station.

C. he and his parents must meet with a juvenile officer.

D. a report is written about his shoplifting.

E. the report is filed with the juvenile officer.

F. his parents are told.

G. and he does not break the law again, the report is destroyed when he is 18 years old.

H. the juvenile officer considers past behavior, current behavior, and future intent before making a decision about penalties.

[1]The legal consequences of juvenile shoplifting as depicted in the program are based on the typical procedures for handling juveniles in Dane County, Wisconsin. The procedures for handling juveniles may vary in your particular area. You may wish, therefore, to check the legal codes in your own area before utilizing the program.

II. ADDITIONAL PROGRAM OBJECTIVES ARE:

A. To Provide Auxiliary Information

The juvenile EMR will be provided with information about the meaning of certain terms used in the handling of juvenile illegal conduct. As a result of seeing the program, students should be able to demonstrate on the multiple choice test accompanying the program their ability to identify that:

1. Probation means a juvenile must meet often with the juvenile officer.
2. A juvenile is someone who is not yet 18 years old.
3. Shoplifting means breaking the law.

B. To Make the Juvenile EMR more aware of the Probability of Apprehension when Shoplifting

The juvenile EMR will be made more aware of the high probability of being caught shoplifting. As a result of seeing the program, students should be able to demonstrate on the multiple choice test accompanying the program their ability to identify that:

1. People who work in stores watch carefully to catch people who steal.
2. People who steal sometimes get caught.

C. To Promote More Negative Attitudes Toward Shoplifting

Attempts are made in the program to promote more negative attitudes toward shoplifting by emphasizing the high probability of apprehension and the unpleasant experiences associated with getting caught shoplifting. Therefore, as a result of having the program students will:

1. more frequently choose "If you steal from a store, you will probably get caught" than "If you steal from a store, you will probably not get caught";

2. when given a hypothetical situation, more frequently choose the alternative of buying rather than stealing;

3. when given the option, more frequently choose the statement "It is always wrong to steal" than the statements "It is never wrong to steal" and "It is sometimes wrong to steal."

REFERENCES

American Institutes for Research. Evaluating research: Strategies and methods. Pittsburgh: American Institutes for Research, 1970.

Ebel, R. L. Intitutional conference on testing problems. Proceedings of the 1967 Invitational Conference on Testing Problems, 1968, 111-131.

Glass, G. V. Educational Evaluation: Review of Educational Research. 40 (2), 1970.

Hemphill, J.K. The relationships between research and evaluation studies. In R. W. Tyler (Ed.), Educational evaluation: New roles, new means. The 68th Yearbook of the NSSE, Part II, Chicago: University of Chicago Press, 1969, 8:189-220.

Lenninger, L. M. Accountability in public education. In F. N. DuBois (Ed.), Toward a theory of achievement measurement. Proceedings of the 1969 Conference on Testing Problems, Princeton: Educational Testing Service, 1969.

Anderson, S.A. The role of evaluative research. In Proceedings of the 1969 Invitational Conference on Testing Problems. New York: Russell Sage Foundation, 1967, 12-136.

Tyler, R., Gagne, R., & Scriven, M. Perspectives of curriculum evaluation. In AERA Monograph Series on Curriculum Evaluation. Chicago: Rand McNally & Company, 1967, 1-83.

Tyler, R. W. Educational evaluation: New roles, new means. Chicago: The University of Chicago Press, 1969.